Yee & Associates, P.C.

4100 Alpha Road
Suite 1100
Dallas, Texas 75244

Main No. (972) 385-8777
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Enclosed herewith:

- Transmittal Document; and
- Appeal Brief.

Re: Application No. **09/616,140**
Attorney Docket No: **AUS9-2000-0257-US1**

Date: Monday, January 24, 2005

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: **Coleman**

Serial No.: **09/616,140**

Filed: **July 13, 2000**

For: **Apparatus and Method for Providing Access to a Data Stream by a Plurality of Users at a Same Time**

§ Group Art Unit: **2661**
§
§ Examiner: **Blount, Steven**
§
§ Attorney Docket No.: **AUS9-2000-0257-US1**
§

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Respectfully submitted,

Duke W. Yee
Registration No. 34,285
YEE & ASSOCIATES, P.C.
P.O. Box 802333
Dallas, Texas 75380
(972) 385-8777
ATTORNEY FOR APPLICANT

Docket No. AUS9-2000-0257-US1 *PATENT*

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Group Art Unit: **2661**

Examiner: **Blount, Steven**

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

APPEAL BRIEF (37 C.F.R. 41.37)

This brief is in furtherance of the Notice of Appeal, filed in this case on November 22, 2004.

The fees required under § 41.20(B)(2), and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

REAL PARTY IN INTEREST

The real party in interest in this appeal is the following party: International Business Machines Corporation (IBM) of Armonk, New York.

RELATED APPEALS AND INTERFERENCES

With respect to other appeals or interferences that will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal, there are no such appeals or interferences.

STATUS OF CLAIMS

A. TOTAL NUMBER OF CLAIMS IN APPLICATION

Claims in the application are: 1-49

B. STATUS OF ALL THE CLAIMS IN APPLICATION

1. Claims canceled: None
2. Claims withdrawn from consideration but not canceled: 23-46
3. Claims pending: 1-49
4. Claims allowed: 9
5. Claims rejected: 1-8, 10-22, 47-49

C. CLAIMS ON APPEAL

The claims on appeal are: 1-8, 10-22, 47-49

STATUS OF AMENDMENTS

No amendments have been submitted since the final office action was issued.

SUMMARY OF CLAIMED SUBJECT MATTER

A. CLAIM 1 - INDEPENDENT

Claim 1 is directed to a method of communicating between one and a plurality of devices. The method is shown in **Figure 6B**, which is discussed on page 22, line 30 through page 23, line 14. The method comprises the steps of:

receiving input to an application data stream from a device (shown in step **730**, discussed on page 23, lines 10-12);

receiving output from the application data stream based on the received input and input from the plurality of other devices (shown in step **720**, discussed on page 22, lines 8-10); and

providing the output to the device and the plurality of devices at substantially a same time (shown by the loop that includes sending step **720** and moving through the table to next entries, shown by step **740** and the return to step **715**, discussed on page 23, lines 3-14);

wherein only the output from the application data stream is shared by the device and the plurality of devices (shown in **Figure 5**, which is discussed on page 16, line 25 through page 18, line 21. It is disclosed that specific devices share each data stream, but information from other data streams are not received unless they are requested.

B. CLAIM 13 - INDEPENDENT

Claim 13 is directed to a method of providing a device with shared access to a data stream. This method is partially shown in **Figure 6A**, which is discussed on page 22, lines 10-28 and the remainder shown in **Figure 6B**, which is discussed on page 22, line 29 through page 23, line 14. The method comprises the steps of:

receiving a request for access to the data stream from a device (shown by step **610** in **Figure 6A**, discussed on page 22, line 13-15);

adding an entry to a data stream splitter table for the device (shown by step **630** in **Figure 6A**, discussed on page 22, lines 16-19); and

providing the device access to the data stream via a data stream splitter in accordance with the entry in the data stream splitter table, wherein providing the device access includes

providing output from the data stream to the device and sending input from the device to the data stream, and wherein the output from the data stream is provided in a real time manner based on the input from the device and input received from at least one other device (shown by **Figure 6B**, especially by steps **710**, **720**, **730** and the mechanism of looping through the process, discussed on page 22, line 29 through page 23, line 14).

C. CLAIM 14 - INDEPENDENT

Claim 14 is directed to a method of providing a plurality of devices shared access to a data stream. The method is shown in **Figure 6B**, which is discussed on page 22, line 29 through page 23, line 14; an example of the display from the method in use is shown in **Figure 7**, discussed on page 23, line 15 through page 24, line 22). The method comprises the steps of:

receiving, from a device, input to the data stream (shown in step **730** of **Figure 6B**);

generating data stream output based on the input from the device (shown in **Figure 7**, discussed on page 23, line 15 through page 24, line 22); and

supplying the data stream output to other devices of the plurality of devices in a sequential manner, wherein the input is non-blocking raw input that is received as the device generates the input on a character by character basis, and wherein the data stream output is generated on a character by character basis as the input is received (shown in step **720** as it is recursively performed, input being non-blocking raw input is discussed on page 20, line 19 through page 21, line 2).

D. CLAIM 15 - INDEPENDENT

The subject matter of claim 15 is directed to a method of providing shared access to a bi-directional data stream. This method is shown in **Figure 6B**, which is discussed on page 22, line 29 through page 23, line 14. The method comprises the steps of:

cycling through entries in a data stream splitter table, each entry in the data stream splitter table identifying a client device (shown by the figure as a whole, especially by steps **710** and **740**, discussed on page 22, line 29 through page 23, line 14);

sending data from the data stream to the client device identified in each entry based on the cycling through of the entries (shown by step **720**, discussed on page 23, lines 8-10); and

receiving data from the client device identified in each entry, based on the cycling through of the entries, and sending the data from the client device to the bi-directional data stream (shown by step **730**, discussed on page 23, lines 10-12).

E. CLAIM 47 - INDEPENDENT

The subject matter of claim 47 is directed to a method of communicating between one and a plurality of devices. The method is shown in **Figure 6B**, which is discussed on page 22, line 29 through page 23, line 14, while an example showing two users providing input is shown in **Figure 7**, discussed on page 23, line 15 through page 24, line 22. The method comprises the steps of:

receiving from at least two of the plurality of devices, input to an application (the step of receiving is shown in step **730** discussed on page 23, lines 10-12);

combining the input from the at least two of the plurality of devices to produce combined output (implied by the recursion of **Figure 6B**, an example showing input from two users is shown in **Figure 7**, discussed on page 23, line 15 through page 24, line 22); and

simultaneously outputting the combined output at each of the plurality of devices (shown in the recursion of **Figure 6B**).

F. CLAIM 48 - INDEPENDENT

The subject matter of claim 48 is directed to a method of communicating between one and a plurality of devices. The method is shown in **Figure 6B**, which is discussed on page 22, line 29 through page 23, line 14; an example of the method is shown in **Figure 7**, discussed on page 23, line 15 through page 24, line 22). The method comprises the steps of:

receiving, from a device, input to an application (receiving shown in step **730**; that it is input to an application is shown in the example of **Figure 7**);

receiving an output from the application based on the received input and input from one or more of the plurality of other devices (shown in the example of **Figure 7**); and

providing the output to each of the plurality of devices at substantially a same time (shown in the recursion of **Figure 6B**, discussed on page 22, line 29 through page 23, line 14 and in the example of **Figure 7**).

G. CLAIM 49 - INDEPENDENT

The subject matter of claim 49 is directed to a method of displaying an output display from an application shared by a plurality of devices. The overall idea of this method is shown in **Figure 5**, discussed on page 16, line 1 through page 22, line 1, with the specific steps shown or suggested in **Figure 6B**, which is discussed on page 22, line 29 through page 23, line 14. **Figure 7**, discussed on page 23, line 15 through page 24, linc 22, shows an example of the method being used, with two users on different devices sharing ideas. The method comprises the steps of:

receiving input from at least two of the plurality of devices (shown by step **730** as it is recursively performed within thc loop);

combining thc input from the at least two of the plurality of devices (suggested by the recursion of **Figure 6B**, an examplc is shown in **Figure 7**); and

displaying, substantially simultaneously, an output display based on the combined input from the at least two of the plurality of devices at the at least two of the plurality of devices (an example of which is shown in **Figure 7**).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

A. GROUND OF REJECTION 1 (Claims 1-5 and 47-49)

Claims 1-5 and 47-49 are rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent 5,497,370 (Hamada *et al.*).

B. GROUND OF REJECTION 2 (Claims 6-8 and 10-22)

Claims 6-8 and 10-22 are rejected under 35 U.S.C. § 103(a) as obvious over Hamada in view of U.S. Patent 6,667,977 (Ono).

ARGUMENTS

The arguments in this appeal are all based upon the assertion that the claims do not read on the cited patents. The Federal Circuit has clearly stated the following guidelines,

> All limitations of the claimed invention must be considered when determining patentability. *In re Lowry*, 32 F.3d 1579, 1582, 32 U.S.P.Q.2d 1031, 1034 (Fed. Cir. 1994). In comparing [a reference] to the claimed invention to determine obviousness, limitations of the presently claimed invention may not be ignored.

It is submitted that all of the grounds of rejection are based on references that do not show the claimed limitations.

A. GROUND OF REJECTION 1 (Claims 1-5 and 47-49)

A.1. Claims 1-5

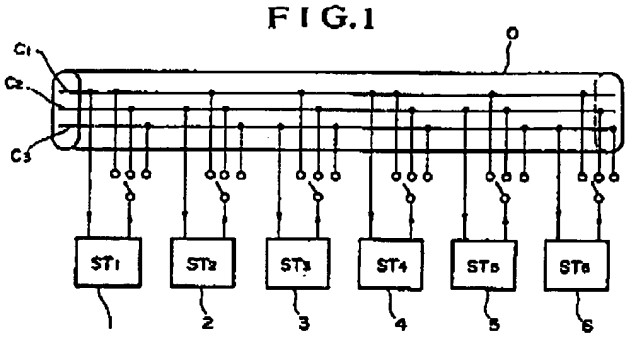
Claim 1, which is the only independent claim of claims 1-5, recites,

> 1. A method of communicating between one and a plurality of devices, comprising:
> receiving, from a device, input to an application data stream;
> receiving an output from the application data stream based on the received input and input from the plurality of other devices; and
> providing the output to the device and the plurality of devices at substantially a same time, wherein only the output from the application data stream is shared by the device and the plurality of devices.

In making the 103 rejection over Hamada, the examiner states,

> With regard to claim 1, note that Hamada teaches receiving input "to" application data stream O (figure 1) and receiving output from the stream based on the input (via the switch on the right side of these members) from device ST1 as well as the other devices ST2, etc. wherein the only output from the application data stream is shared by the devices. Although it is not explicitly stated that the output is provided to the plurality of devices at substantially the same time, the concurrent operation of each of the switches ST1, ST2, etc. would make it obvious to one of ordinary skill in the art that this would be essentially so.

FIG.1



It is noted that the rejection appears to be reading the claimed method as a method based primarily on hardware, while applicant's intent is to claim a method based on software handling of communications, such that two or more users can share information from the same source in real-time. It is submitted that the interpretation of the claims used in the rejection does not hold up if one reads the claims carefully and fully.

The rejection of claim 1 appears to be solely based on the figure shown above. However, regarding this figure, Hamada notes,

> Referring now to FIG. 1, there is shown the concept of a transmission system representing the features of the present invention. A transmission line O includes a plurality of transmission channels (in the embodiment the number of channels is 3, i.e., C.sub.1, C.sub.2 and C.sub.3), each of transmission equipment 1 to 6 effects the reception of information through a certain fixed transmission channel and also effects the transmission of information by selecting the receiving transmission channel of associated one of the transmission equipment.
>
> From the Figure it will be seen that the present invention has the effect of increasing the overall transmission capacity of the network system on the whole while limiting the transmission capacity of each transmission equipment to the band corresponding to each transmission channel.
>
> As the multiplexing method for forming the plurality of transmission channels C.sub.1, C.sub.2 and C.sub.3, any of the time division multiplexing, the wavelength multiplexing and the space multiplexing may be used and there is no particular limitation to the degree of multiplexing or the number of channels.
>
> The channel selection during transmission is attained by detecting the proper receiving channel of the destination transmission equipment. Since the present case shows that the channel 1 is assigned for receiving purposes to the transmission equipment 1 and 4, the channel 2 to the transmission equipment 2 and 5 and the channel 3 to the transmission equipment 3 and 6, if, for example, the transmission equipment 1 is to transmit information to the transmission

> equipment 4, the channel 1 can be used to transmit; if the information is to be transmitted to the transmission equipment 3 it must contend for the sending right on the channel 3.[1]

Thus, in Hamada, the devices appear to receive on only one channel, but to be able to transmit over several channels, using the switches to change channels.

The rejection appears to have read the "input" to the data stream on the setting of a switch. However, it is submitted that while the switches of Hamada can affect whether a device receives a message intended for that device, the switches do not determine what the output will be. It is further submitted that since the switches do not determine what the output will be, the output is not "based" on the switch settings, as this phrase would be understood by one of ordinary skill in the art. It is therefore submitted that this limitation is not met.

Further, in the final office action, replying to earlier arguments, the examiner stated,

> The examiner believes that in Hamada et al, the act of "separating an input signal from the transmission line into a plurality of receiving transmission channels" (abstract, lines 10+) constitutes sharing the transmission line.[2]

In response, it is respectfully noted that applicants have not recited sharing a "transmission line", but have claimed sharing an "application data stream". It is submitted that this interpretation, which appears to have been followed in all the rejections, confuses a transmission line with the information that is transmitted on the line. It is further submitted that this interpretation is contrary to what one of ordinary skill in the art would understand from the recitation. It is submitted that the limitations of claim 1 have not been met and that the rejection of claim 1 should be overturned.

A.2. Claim 47

Claim 47 recites,

> 47. (Original) A method of communicating between one and a plurality of devices, comprising:
>
> receiving from at least two of the plurality of devices, input to an application;
>
> combining the input from the at least two of the plurality of devices to produce combined output; and

[1] Hamada, col.3, line 43 – col.4, line 9
[2] Final office action of 08/23/2004, page 5, lines 1-3

simultaneously outputting the combined output at each of the plurality of devices.

It is noted that this claim, unlike claim 1, recites that input to an application is received from two devices, combined, and output to both of the devices. It is respectfully submitted that Hamada does not disclose receiving input to an application. It is further submitted that Hamada is directed to managing the mechanics of a transmission line, while the instant application and claims are directed to managing the information that is sent. While the specific wording of claim 1 may arguably have allowed the unintended interpretation, the same cannot be said of the instant claim. Receiving input to an application implies that information – data, instructions, etc. – are being sent to an application. Notably, however, Hamada is not interested in the information carried in the messages or even in the messages themselves; this patent is only concerned with how the messages are sent, in order to maximize the transmission capability of the system. In the abstract, Hamada discusses,

> A network system includes a transmission line including a plurality of transmission channels, a plurality of transmission equipment connected to the transmission line to effect the transmission and reception of information between each other, and a plurality of devices connected to each of the transmission equipment, thereby effecting the transmission of information between the devices connected to the plurality of transmission equipment.

Notably, Hamada is discussing the hardware of a system. It is submitted that this is not what this claim recites; rather this claim is directed to taking the information carried in the input, combining several such inputs, and outputting them on each of the devices. Because Hamada is not concerned with content, this patent does not and cannot read on this claim. It is submitted that the rejection of claim 47 should be overturned.

A.3. Claim 48

Claim 48 recites,

> 48. (Original) A method of communicating between one and a plurality of devices, comprising:
> receiving, from a device, input to an application;
> receiving an output from the application based on the received input and input from one or more of the plurality of other devices; and
> providing the output to each of the plurality of devices at substantially a same time.

It is noted that unlike the previously argued claims, this claim not only receives input to an application from a device, but it also receives output from the application that is based on combined input from several devices.

As in claim 47, this claim receives content, i.e., input to an application. But unlike the other claims, claim 48 recites that the application makes a response that is based on combined inputs. Again, this claims is directed, not to hardware handling of the transmission line, but to the content of that transmission line. Hamada does not disclose an application, nor does it disclose that an application combines input from two devices. Normally, when one device is using a resource, such as an application, the device will have exclusive use of the particular copy of the application available to it. Hamada certainly does not recite that an application receives input from two sources, then combines the inputs. Again, Hamada is concerned with transmission, not with content of the transmission.

In response to the arguments of the first amendment, the final office action states,

> With respect to applicants argument that Hamada et al does not teach receiving an output from the application data stream based on the received input and input from the plurality of other devices ... the examiner notes that the output from the application data stream 0 to the plurality of devices ST1, ... is determined based upon the switch input values of the ST1, ST2, ... and that the value of the switch at an upstream point (say ST1) will affect the value of the switch at a downstream point (say ST2).

This comment supports the assertion that Hamada is directed to hardware, not to content. Further, it is noted that the statement "that the value of the switch at an upstream point (say ST1) will affect the value of the switch at a downstream point (say ST2)" is not accurate. The switch settings are affected by two factors: 1) each device is assigned a channel, on which transmissions to that device will be made and 2) if a first device needs to send information to a second device on another channel, the first device will need to switch channels for the duration of the transmission. Changing the setting of one switch does not affect the setting of another; there is no mechanism by which one switch can be changed and affect the setting of another switch.

It is asserted that the recitation "receiving an output from the application based on the received input and input from one or more of the plurality of other devices" is not met. It is further requested that the rejection of claim 48 be overturned.

A.4. Claim 49

Claim 49 recites,

> 49. (Original) A method of displaying an output display from an application shared by a plurality of devices, comprising:
> receiving input from at least two of the plurality of devices;
> combining the input from the at least two of the plurality of devices; and
> displaying, substantially simultaneously, an output display based on the combined input from the at least two of the plurality of devices at the at least two of the plurality of devices.

It is noted that unlike the previously discussed claims, this claim not only receives and combines input from two devices, but it displays an output based on the combined inputs at the devices. The arguments supporting this claim are similar to the arguments presented above in claim 48. It is submitted that Hamada is concerned with managing hardware in a fashion that will increase the transmission capabilities. Hamada does not take the combined input from several devices and display the results on both devices. That would not perform any function in which Hamada has shown an interest. It would, however, allow two users to look at the same information at the same time, a function to which the instant application and claim are directed.

It is submitted that the limitations of this claim are not met; it is requested that the rejection of this claim be overturned.

B. GROUND OF REJECTION 2 (Claims 6-8 and 10-22)

Since claims 6-8 and 10-12 are dependent on claim 1, claim 13 has been chosen as a representative claim for this rejection. This claim recites,

> 13. (Original) A method of providing a device shared access to a data stream, comprising:
> receiving a request for access to the data stream from a device;
> adding an entry to a data stream splitter table for the device; and
> providing the device access to the data stream via a data stream splitter in accordance with the entry in the data stream splitter table, wherein providing the device access includes providing output from the data stream to the device and sending input from the device to the data stream, and wherein the output from the data stream is provided in a realtime manner based on the input from the device and input received from at least one other device.

The final rejection states,

> Hamada et al. teaches the invention as described [in the prior rejection] ... Hamada et al does not, however, teach cycling through entries in a data stream splitter table to identify entries associated with the data stream splitter, and providing the device and other devices access to the application stream based on this cycling .
>
> Ono teaches (in a tdma system – see col. 2 lines 40+) providing information (cells) to the bus from a network, as taught in col. 9, lines 23, and also scheduling information for transmission via a bus scheduler 51 so that it may be sent out in a cyclical manner (see col. 7 lines 5+, col. 4 lines 30+, and col. 9 lines 18+).
>
> It would have been obvious to one of ordinary skill in the art at the time of the invention to have provided Hamada with a means for cyclically searching through entries in a splitter/scheduling table in light of the teachings of Ono in order to provide a means for accommodating different priorities for scheduling based on things such as different data rates or classes of services and thus provide for a more structured flow of information through the system.
>
> ... note that it would have been obvious to add different entries in the scheduling table of Ono for the different splitter devices ST1, etc. in Hamada

The cited sections of Ono teach,

> The trunk line controller 14 time-division multiplexes ATM cells sent to the ATM bus 12 from the cell assembler/disassemblers and transmits these cells to the network via a trunk line 17.sub.1. In addition, the trunk line controller 14 sends the ATM bus 12 ATM cells from the network. By virtue of this arrangement, the ATM cell multiplexing apparatus implements cell multiplexing and traffic control without being equipped with an ATM switch.[3]

> As for the order of time-slot allocation to the main schedule table MST, allocation is performed preferentially in the aforesaid order CBR.fwdarw.rt-VBR.fwdarw.nrt-VBR. Accordingly, first ten time slots (see FIG. 17) are allocated to CLADx at equal intervals in such a manner that CLADx will appear every 153 or 154 time slots; then 768 time slots are allocated to CLADy at equal intervals in such a manner that CLADy will appear every 2 or 3 slots; and finally 512 time slots are allocated to CLADz at equal intervals in such a manner that CLADz will appear every 3 slots. Function codes are filled in all of the remaining time slots in such a manner that the ATM bus scheduler will make a transition to and search the subtables unconditionally.[4]

> In accordance with a second aspect of the present invention, an ATM cell scheduler (1) creates a main schedule table, which applies a transmission privilege in each of N-number of time slots to a prescribed cell assembler, based upon service categories and traffic of all channels accommodated by a cell assembler; (2) creates a subschedule table, which is referred to after the

[3] Ono, col.2, lines 40-49
[4] Ono, col.4, lines 30-43

> main schedule table, for allocating more transmission privileges to cell assemblers that accommodate a low-speed CBR channel; and (3) and grants transmission privilege to cell assemblers upon referring to the main schedule table and subschedule table.
>
> The ATM bus scheduler 51, which is for granting the cell transmission privilege to the cell assembler/disassemblers 53.sub.1 -53.sub.3, performs traffic management, which is commensurate with the service category and traffic, for each of the cell assembler/disassemblers .sup.53.sub.1 -53.sub.3. For example, the ATM bus scheduler 51 grants the transmission privilege to cell assembler/disassemblers that have been allocated to each of N-number of cyclically repeating time slots, and a cell assembler/disassembler that has been granted the transmission privilege is allowed to send cells to the ATM bus. The trunk line controller 54 time-division multiplexes ATM cells sent to the ATM bus 52 from the cell assembler/disassemblers and transmits these cells to the network via a trunk line 57.sub.1. In addition, the trunk line controller 54 sends the ATM bus 52 the ATM cells from the network. If the trunk line controller 54 or trunk line 57.sub.1 malfunctions, the backup line controller 55 acts in place of the trunk line controller 54 to implement the sending and receiving of cells between the network and ATM cell multiplexing apparatus.[5]

It is respectfully submitted that there are two claim limitations that are not met by Hamada, Ono, or by a combination of these two patents: (a) "providing the device access to the data stream via a data stream splitter in accordance with the entry in the data stream splitter table" and (b) "wherein the output from the data stream is provided in a realtime manner based on the input from the device and input received from at least one other device."

Regarding the first of these limitations, while it is noted that Ono discloses a schedule table, it is submitted that this table appears to be determining <u>when</u> items are sent, not <u>whether</u> a particular device is given access to a given data stream. These are two different things. The invention claimed here is directed to controlling access to a given data stream by the presence of a table entry supporting such access. Information can be shared by different users, but not by throwing the doors open to everyone on the system. Rather, control of access to any given data stream is managed using the recited table. The table of Ono is not directed to providing access, but to providing scheduling. As noted in the quote from the Federal Circuit at the beginning of the arguments section, <u>all limitations</u> of the claims must be considered. Thus, the references need to show not only a table, but a table used in the way that the recited table is used. The table of Ono

[5] Ono, col.9,lines 10-28

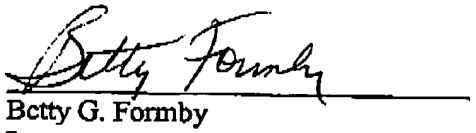
does not control access to a data stream; it only controls when a given item is sent. Therefore, this limitation is not met.

Regarding the second limitation, that the output is based on the input from the device and input from another device, it is noted that the rejection bases this on,

> Hamada teaches receiving input "to" application data stream O (figure 1) and receiving output from the stream based on the input (via the switch on the right side of these members) from device ST1 as well as the other devices ST2, etc.

If, as the rejection states, the "input" to the data stream is the setting of a switch, then this patent should show that the "output" is based on the switch settings. However, it is submitted that while the switches of Hamada can affect whether a device receives a message intended for that device, the switches do not determine what the output will be. It is further submitted that since the switches do not determine what the output will be, the output is not "based" on the switch settings, as this phrase would be understood by one of ordinary skill in the art. It is therefore submitted that this limitation is not met.

Applicants have shown two limitations in the exemplary claim that are not met by the cited art. It is requested that the rejection of these claims be overturned.



Betty G. Formby
Reg. No. 36,536
YEE & ASSOCIATES, P.C.
PO Box 802333
Dallas, TX 75380
(972) 385-8777

CLAIMS APPENDIX

The text of the claims involved in the appeal are:

1. A method of communicating between one and a plurality of devices, comprising:

receiving, from a device, input to an application data stream;

receiving an output from the application data stream based on the received input and input from the plurality of other devices; and

providing the output to the device and the plurality of devices at substantially a same time, wherein only the output from the application data stream is shared by the device and the plurality of devices.

2. The method of claim 1, wherein output from the application data stream is shared by the device and the plurality of devices using a data stream splitter.

3. The method of claim 2, wherein the data stream splitter is dynamically constructed to provide shared access to the application data stream.

4. The method of claim 1, further comprising establishing a pseudo-terminal for the device.

5. The method of claim 4, wherein output received by the data stream splitter from the application data stream is sent to the pseudo-terminal and data received by the pseudo-terminal from the device is sent to the data stream splitter.

6. The method of claim 2, wherein receiving input to the application data stream includes:

cycling through entries in a data stream splitter table to identify entries associated with the data stream splitter; and

cyclically providing the device and other devices access to the application data stream based on the cycling through the entries in the data stream splitter table.

7. The method of claim 1, further comprising:

generating a data stream splitter to handle access to the application data stream if the application data stream is not already being handled by another data stream splitter; and

adding an entry to a data stream splitter table for the device and the data stream splitter.

8. The method of claim 1, wherein the receiving input to an application data stream, receiving output from an application data stream, and the providing steps are performed by a data stream splitter manager.

10. The method of claim 8, wherein the data stream splitter manager is transparent to a user of the device.

11. The method of claim 8, wherein the data stream splitter manager includes a graphical user interface.

12. The method of claim 1, further comprising storing data from the data stream in a buffer, wherein when the device is first provided access to the data stream, the contents of the buffer are streamed to the device.

13. A method of providing a device shared access to a data stream, comprising:

receiving a request for access to the data stream from a device;

adding an entry to a data stream splitter table for the device; and

providing the device access to the data stream via a data stream splitter in accordance with the entry in the data stream splitter table, wherein providing the device access includes providing output from the data stream to the device and sending input from the device to the data stream, and wherein the output from the data stream is provided in a realtime manner based on the input from the device and input received from at least one other device.

14. A method of providing a plurality of devices shared access to a data stream, comprising:

receiving, from a device, input to the data stream;

generating data stream output based on the input from the device; and

supplying the data stream output to other devices of the plurality of devices in a sequential manner, wherein the input is non-blocking raw input that is received as the device generates the input on a character by character basis, and wherein the data stream output is generated on a character by character basis as the input is received.

15. A method of providing shared access to a bi-directional data stream, comprising:

cycling through entries in a data stream splitter table, each entry in the data stream splitter

table identifying a client device;

sending data from the data stream to the client device identified in each entry based on the cycling through of the entries; and

receiving data from the client device identified in each entry, based on the cycling through of the entries, and sending the data from the client device to the bi-directional data stream.

16. The method of claim 15, wherein access to the data stream is shared by a plurality of client devices based on the entries in the data stream splitter table, each of the client devices having full access to the data stream.

17. The method of claim 15, wherein the client devices have a private communication channel to the data stream but the output from the data stream is shared by all of the client devices.

18. The method of claim 15, wherein the sending and receiving steps are performed by a data stream splitter.

19. The method of claim 18, wherein the data stream splitter is dynamically constructed to provide shared access to the data stream.

20. The method of claim 15, wherein sending data from the data stream to the client device includes sending data from the data stream splitter to a pseudo-terminal associated with the client device.

21. The method of claim 15, wherein receiving data from the client device includes receiving data from the client device via a pseudo-terminal associated with the client device.

22. The method of claim 18, wherein the data stream splitter provides non-blocking raw input/output access to the data stream.

47. A method of communicating between one and a plurality of devices, comprising:

receiving from at least two of the plurality of devices, input to an application;

combining the input from the at least two of the plurality of devices to produce combined output; and

simultaneously outputting the combined output at each of the plurality of devices.

48. A method of communicating between one and a plurality of devices, comprising:

receiving, from a device, input to an application;

receiving an output from the application based on the received input and input from one or more of the plurality of other devices; and

providing the output to each of the plurality of devices at substantially a same time.

49. A method of displaying an output display from an application shared by a plurality of devices, comprising:

receiving input from at least two of the plurality of devices;

combining the input from the at least two of the plurality of devices; and

displaying, substantially simultaneously, an output display based on the combined input from the at least two of the plurality of devices at the at least two of the plurality of devices.

EVIDENCE APPENDIX

There is no evidence to be presented.

RELATED PROCEEDINGS APPENDIX

There are no related proceedings.